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ADDITIONS TO THE FLORA OF FISHERS ISLAND, NEW YORK

HAROLD ST. JOHN

ABOUT two miles off the coast of Connecticut, near New London, is a long, wooded island, Fishers Island. Though remote geographically, it is within the political boundaries of Suffolk County, New York. The island is seven miles in length, with an extreme width of one and one half miles and an average width of one half a mile, and its highest hills are 110 and 120 feet in height. There are salt ponds, salt marshes, sandy or gravelly beaches, several fresh ponds, and the rolling, hilly uplands which have a dense but wind-swept scrub or forest.

Published accounts of the botany of Fishers Island are few. Those known to the author are the following, arranged chronologically:

Graves, C. B. Notes from Plum Island and Fisher's Island, N. Y. Bull. Torrey Bot. Club xxiii. 59 (1896).

Evans, A. W. A New Station for *Coeloleurum actaeifolium*. *Torreya* xvii. 103 (1917).

Evans, A. W. The Hepaticae of Fisher's Island. *Torreya* xxvi. 85-86 (1926).

Hanmer, C. C. Plants of Fishers Island. *Torreya* xl. 65-81 (1940).

The last publication gives the common name, the scientific name, and often the abundance of about 500 species of vascular plants. These are the records of thirty years of collecting by Mr. Hanmer who has long maintained a summer home on the island.

He refers to the disappearance of numerous species due to draining. It is obvious that the recent development of numerous estates, summer homes, hotels, country clubs, etc., have much restricted the native flora.

The writer here presents a supplement to Hanmer's list of the vascular flora, based upon his own collections and upon published records. It is probable that other records may be found in the C. B. Graves herbarium at Connecticut College, New London, which the writer has not had an opportunity to examine.

In 1920 from August 10th to the 13th the author collected on the western end of the island while visiting at the army post, Fort H. G. Wright. This 1920 collection was made in behalf of the Gray Herbarium, so was left there when the collector resigned to accept a position at the State College of Washington. C. A. Weatherby kindly determined this collection. His determinations are used here, except when modified owing to more recent nomenclatorial changes. On September 21, 1939, the author had three hours on the island with an auto for transportation. The collections made on these two short visits total 238 species. Of these 75 are not included by Hanmer. They are listed below. Various other species common to Hanmer's and the author's collections have been distributed with different specific names. In general, he followed the names in Gray's Manual, ed. 7, while the author has endeavored to use all corrections or later changes that are valid. These nomenclatorial divergencies are not included here, as the initiated can readily check them. The author's collections are deposited in the Gray Herbarium, with duplicates in several other eastern herbaria. In the following list is given the scientific name of each species and the author's collection number which represents it.

OSMUNDACEAE

Osmunda regalis L. var. *spectabilis* (Willd.) Gray, 2523.

EQUISETACEAE

Equisetum arvense L. forma *nemorosum* Braun, 2525.

Forma *decumbens* (G. F. W. Meyer) Klinge, 2526.

LYCOPODIACEAE

Lycopodium obscurum L., 20058.

PINACEAE

Juniperus virginiana L. var. *crebra* Fern. & Griseb., 2535. It is probable that the collections recorded by Hanmer as the species belong to this recently described northern variety.

NAJADACEAE

Zostera marina L., 2545.

ALISMATACEAE

Sagittaria Engelmanniana J. G. Sm., 2547.

GRAMINEAE

Agropyron repens (L.) Beauvois f. *pilosum* (Scribn.) Fern., 2550.
Agrostis perennans (Walt.) Tuckerm., 2551.

Andropogon scoparius Michx. var. *frequens* Hubb., 20039;
 20097.

Var. *septentrionalis* Fern. & Griseb., 20061.

Glyceria striata (Lam.) Hitchc., 2560.

Panicum meridionale Ashe var. *albemarlense* (Ashe) Fern.,
 2569; 20041.

P. microcarpon Muhl., 2571.

P. virgatum L. var. *spissum* Linder, 2568; 20080.

CYPERACEAE

Cyperus filiculmis Vahl var. *macilentus* Fern., 2595.

Eleocharis parvula (R. & S.) Link, 2610.

ARACEAE

Symplocarpus foetidus (L.) Nutt., 2619.

JUNCACEAE

Juncus effusus L. var. *solutus* Fern. & Wieg., 2628.

J. marginatus Rostk., 2629.

J. macer S. F. Gray, 2635.

LILIACEAE

Smilax glauca Walt. var. *leurophylla* Blake, 2645.

SALICACEAE

Populus alba L., 2663, introduced.

P. grandidentata Michx., 2662.

P. tremuloides Michx., 2664.

Salix discolor Muhl., 2670.

MYRICACEAE

Comptonia peregrina (L.) Coulter var. *asplenifolia* (L.) Fern.,
2674.

JUGLANDACEAE

Carya glabra (Mill.) Spach, 2678.

BETULACEAE

Alnus incana (L.) Moench., 2683.
Betula populifolia Marsh., 2687.

FAGACEAE

Quercus velutina Lam., 2693.

POLYGONACEAE

Polygonum Convolvulus L., 2701, introduced.
P. Hydropiper L. var. *projectum* Stanf., 20092.
P. pensylvanicum L. var. *laevigatum* Fern., 20071.

CHENOPODIACEAE

Salsola Kali L. var. *caroliniana* (Walt.) Nutt., 2710.

CARYOPHYLLACEAE

Arenaria peploides L. var. *robusta* Fern., 20066.

CRUCIFERAE

Brassica kaber (DC.) L. C. Wheeler, 20085, introduced.

DROSERACEAE

Drosera rotundifolia L., 2732.

ROSACEAE

Agrimonia striata Michx., 2737.
Potentilla canadensis L. var. *typica* Fern., 2743.
P. pacifica Howell, 20074.
P. simplex Michx. var. *calvescens* Fern., 2742.
Rubus ostryifolius Rydb., 2756.

LEGUMINOSAE

Lathyrus japonicus Willd. var. *pellitus* Fern., 2773.

EUPHORBIACEAE

Euphorbia glyptosperma Engelm. fide Graves, C. B. (Bull. Torrey Bot. Club xxiii. 59, 1896), and Gray, A. (Man. Bot. ed. 7, 546, 1908).

ANACARDIACEAE

Rhus copallina L. var. latifolia Engler, 2790.

AQUIFOLIACEAE

Ilex verticillata (L.) Gray var. tenuifolia (Torr.) Wats., 2793.

VITACEAE

Vitis labrusca L., 2811.

GUTTIFERAE

Hypericum mutilum L. var. parviflorum (Willd.) Fern., 20099.

VIOLACEAE

Viola pallens (Banks) Brainerd, 2813.

ONAGRACEAE

Circaeа latifolia Hill, 2825.

Ludwigia palustris (L.) Ell. var. americana (DC.) Fern. & Grise., 20101.

UMBELLIFERAE

Cicuta bulbifera L., 2832.

Coelopleurum lucidum (L.) Fern. Reported (as *C. actaeifolium*) by Evans, A. W. (*Torreya* xvii. 103, 1917).

Hydrocotyle sp. A sterile collection, 20059, proved inadequate for specific identification.

Sium suave Walt., 2837.

ERICACEAE

Gaylussacia frondosa (L.) T. & G., 2849.

Kalmia angustifolia L., 2853.

Rhododendron viscosum (L.) Torr., 2863.

PRIMULACEAE

× Lysimachia producta (Gray) Fern., 2870.

CONVOLVULACEAE

Cuscuta pentagona Engelm., 20090.

LABIATAE

Monarda didyma L., 2890.

Prunella vulgaris L. var. lanceolata (Barton) Fern., 2891.

SOLANACEAE

Datura Stramonium L., 20076, introduced.

PLANTAGINACEAE

Plantago elongata Pursh was reported by Graves, C. B. (Bull. Torrey Bot. Club, xxiii. 59, 1896).

RUBIACEAE

Mitchella repens L., 2920.

COMPOSITAE

Ambrosia artemisiifolia L. var. *elatior* (L.) Descourtils, 20073.

Aster paniculatus Lam. var. *simplex* (Willd.) Burgess, 20047.

A. pilosus Willd., 20083.

Bidens connata Muhl. var. *petiolata* (Nutt.) Farw., 20098.

Erechtites megalocarpa Fern., 20053. This is a range extension, westwards from Buzzards Bay, Mass.

Helianthus annuus L., 20044, introduced.

Lactuca canadensis L. var. *latifolia* Kuntze, 2956.

Xanthium italicum Mor., 20050, introduced.

OSBORN BOTANICAL LABORATORY, YALE UNIVERSITY,
New Haven, Connecticut

THE PUBESCENT FORM OF CEANOTHUS OVATUS

J. H. SOPER

WHILE determining and mapping the distributions of some plants in my Southwestern Ontario collections of 1940, I came upon a set of plants which were clearly the pubescent extreme of *Ceanothus ovatus* Desf., first described by Torrey and Gray.¹ This has been passing in most Floras and Manuals as var. *pubescens* Torr. and Gray, but a study of the nomenclature shows that the correct varietal epithet is var. *pubescens* Watson. The facts disclosed by the investigation are here briefly summarized.

Unfortunately when Torrey and Gray described the pubescent phase of *Ceanothus ovalis* Bigel.² they did not give it a name, thus rendering the publication incomplete. In 1862 Engelmann took up the Torrey and Gray plant as distinct, for in his *Plants of the Upper Missouri* there is listed a *Ceanothus ovalis*, var. *pubescens*.³ Although no reference is given to the Torrey and

¹ Fl. N. Amer. 1: 265 (1838)—“β. ? leaves (especially on the veins), young branches, and peduncles pubescent.”

² Fl. Bost. ed. 2, 92 (1824). This name was later replaced by the earlier *C. ovatus* Desf. Arb. 2: 381 (1809).

³ Trans. Amer. Phil. Soc. n. s. 12: 187 (1862).

Gray description, there is little doubt that the plant in question was the same and that Engelmann was aware of the description. As far as I have been able to determine, the first writer to bring together both the description and the name is Sereno Watson.⁴ He cited the Torrey and Gray reference and also the Engelmann reference, and in addition placed the variety under the correct binomial *C. ovatus* Desf. For this reason the correct name of the pubescent extreme of *Ceanothus ovatus*, when given varietal rank, should be var. *pubescens* Watson.

Distribution-maps of both *C. ovatus* and the pubescent extreme were made from the representative material in the Gray Herbarium. These showed that the pubescent phase, which has generally been considered as having a more western distribution, occurs within the range of the species even as far east as the Great Lakes and northeastern Massachusetts. Since this pubescent extreme does not have definite claim to rank as a geographic variety, I am considering it as merely a pubescent form. The essential bibliography is as follows:

CEANOTHUS OVATUS Desf., forma **pubescens** (Wats.), stat. nov. *C. ovalis* Bigel., ? Torrey and Gray, Fl. N. Amer. 1: 265 (1838). *C. ovalis*, var. *pubescens* Engelmann in Pl. Upp. Miss. 187 (1862), nomen nudum. *C. ovatus*, var. *pubescens* Watson, Bibl. Ind. 166 (1878); Trelease in Proc. Calif. Acad. Sci. 2nd. ser. 1: 108 (1889); and later authors, wrongly ascribed to Torr. & Gray. *C. pubescens* ("T. & G.") Rydberg in Small, Fl. Se. U. S. 751, 1334 (1903); not Ruiz & Pavon, Fl. Peruv. 3: 6, pl. 228 (1802).

GRAY HERBARIUM.

SPARGANIUM GLOMERATUM IN MINNESOTA.—A colony of *Sparganium glomeratum* Laest. occurs in Duluth, Minnesota. It is located on Minnesota Point in Sec. 19, in a shallow bog formerly connected with Superior Bay. Cushioned in *Sphagna* in a *Calla-Acorus* association the plants grow in water from a few to several inches deep, depending on the fluctuating bay level.

The Duluth colony occasioned much interest to the author whose collections Nos. 1627 and 1703 were distributed as *S. fluctuans*. Dr. John B. Moyle's annotation of the sheets in the University of Minnesota Herbarium as *S. fluitans* Fries, the

⁴ Bibl. Ind. 166 (1878).

occurrence of which in America was unknown to the author at that time, led to further study of the material in living and dried states.

The Duluth plants have a sparse and delicate root development with slender rhizomes, apparently different from European plants which are more robust with thicker roots and rhizomes. Moreover, the fruiting heads in the Duluth plants are usually four, sometimes three, whereas in the plants from Sweden and Finland they are usually five, rarely three or six. However, a careful comparative study of flowers and fruits was conclusive as to identity of the Duluth collections.

Regarding the status of this species Professor M. L. Fernald kindly furnished the following critical statement: "*S. glomeratum* Laest. (1852) is regularly kept up by the European authors. It was maintained by Graebner, is also maintained in Holmberg's edition of Hartman's Handbok i. 78 (1922) and in Lindman's Svensk Famerogamflora 44 (1918), both Lindman and Holmberg stating that *S. fluitans* Fries was a mixture or *nomen confusum*, standing primarily upon *S. affine* Schnitzl. (1845) which, as I have repeatedly shown, is *S. angustifolium* Michx. (1803)." Furthermore, Prof. Fernald concludes: "Since the Scandinavian authors so generally reject *S. fluitans* as a *nomen confusum* and cling to *S. glomeratum*, it seems to me wiser to follow their interpretation."

Pertaining to the occurrence of *S. glomeratum* in America, according to Prof. Fernald the species was reported by Dr. Harrison F. Lewis from the Natashaquan River region of Saguenay County, Quebec in Canadian Field Naturalist xlv. 178 (October, 1931). Meinhausen's statement in part, "Aus Nord-America . . ." in Mel. Biol. Acad. St. Petersbourg XIII. (1893) 389, is based upon *S. simplex* Huds. var. *fluitans* Engelm., synonymous with *S. fluctuans* (Morong) Robinson.

In addition to the Duluth specimens there is a single sheet in the University of Minnesota Herbarium labeled as follows: "Lake Ithasea, Minn., July 1893. A. B. Aiton." Obviously the locality is Lake Itasca where the plants have not been discovered since.

The author is indebted to Dr. H. A. Gleason, New York Botanical Gardens, and to Dr. C. O. Rosendahl, University of

Minnesota for herbarium and library facilities; to Dr. F. J. Hermann, Bureau of Plant Industry for checking distribution data; to Prof. M. L. Fernald for the needed data on the specific status and records of distribution.—OLGA LAKELA, State Teachers College, Duluth.

TERATOLOGIC TYPHA

HAROLD ST. JOHN

THE occasional finding of an abnormal specimen of some well-known plant is an incident of decided interest to the collecting botanist. From that time on, he watches with keener eyes for a repetition of similar monstrosities within that particular species, and soon he can add it to his list of those species which commonly produce teratologic individuals. All of us have such a list of a score or more names, often it is only a mental list, but it is nevertheless available for quick and ready reference. A record of some of these observations may prove of great value to those active in tracing the phylogeny of the species.

During the latter part of August and early September, 1917, Miss Grace M. Bryant noticed and collected some Cat-tails that were decidedly out of the ordinary. Nearly all of these are shown in the accompanying photograph. On September 14th Miss Bryant and the author visited the locality together. It is along both banks of Alewife Brook between Massachusetts Avenue and the first bridge, a railroad bridge, a quarter of a mile distant to the south. The stream here forms the boundary between Cambridge and Arlington. Both Cat-tails, *Typha latifolia* L. and *T. angustifolia* L., occur here along the banks of the sluggish stream, but the latter predominates often forming a continuous fringe.

Three abnormal plants of *T. latifolia* were observed. One is shown to the far right in the photograph. The staminate part of the spike has fallen. Below the broken tip of the stem is the normal pistillate part, while five inches below this and partially sheathed in the axils of the two uppermost leaves is an additional pistillate part. Such specimens with two superposed pistillate parts of the inflorescence have been found before in North America as is indicated by a specimen in the Gray Herbarium and one in the Herbarium of Yale University. The

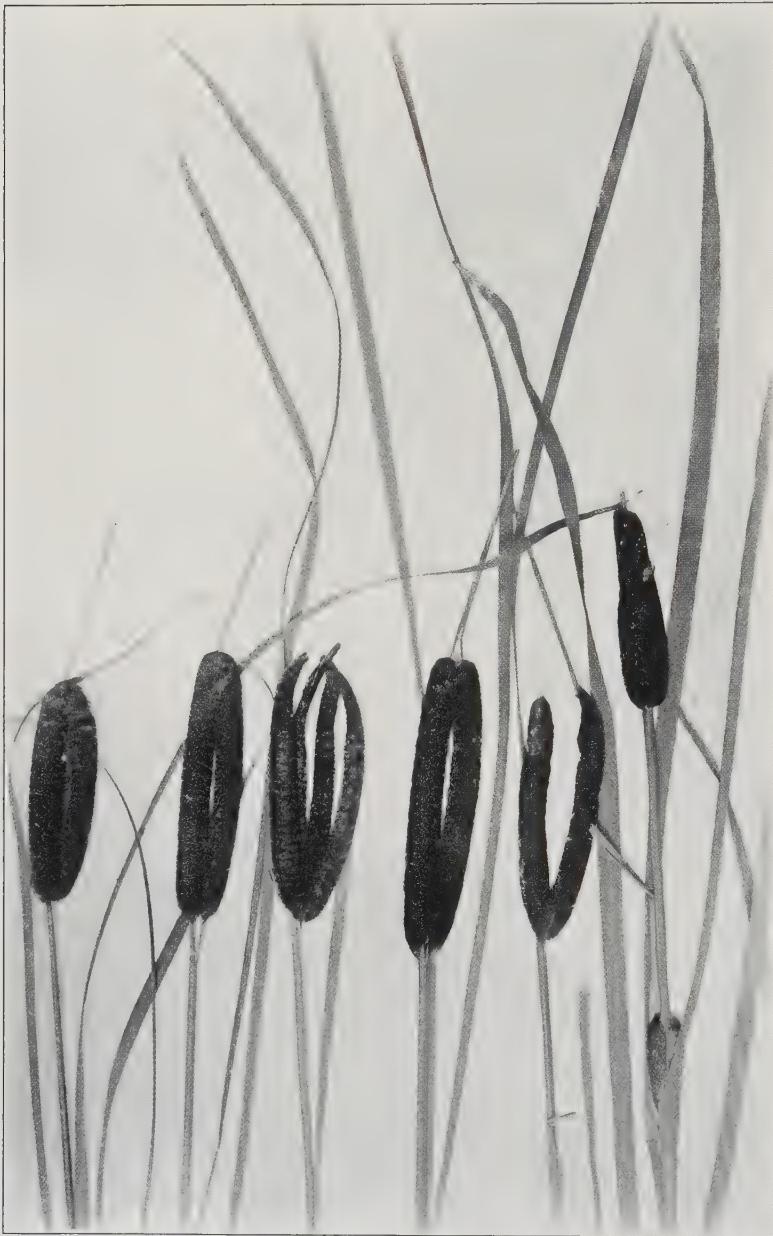


FIG. 1. From the left, five plants of *TYPHA ANGUSTIFOLIA* L. with juxtaposed pistillate spikes; at the right one *TYPHA LATIFOLIA* L. with superposed pistillate spikes.

former is without any statement of locality; it was collected by William Boott, July 25, 1869. The latter was found at New Haven, Connecticut, in 1858 by Prof. D. C. Eaton. Dr. G. F. Koch described¹ a somewhat similar condition in a plant with three superposed segments of the spike, the lowest being pistillate, the uppermost being staminate, while the median contained both staminate and pistillate flowers. Similar plants of *T. latifolia* were described and illustrated² by Dr. R. v. Soo. The other two abnormal specimens of *T. latifolia* observed along Alewife Brook also had two instead of one pistillate part of the spike, but on these plants the two pistillate parts were juxtaposed or twinned instead of being superposed. On their nearer faces each has a line which seems to represent a line of sterile tissue below and originally the line of cohesion of the two now separate parts. A single stem bears these two but as the fruits and their attendant bristles develop they exert a pressure upon each other causing the splitting of the stem both above and below. The upper part usually gives way utterly, thus reducing the tension on the lower part. In the Herbarium of the New England Botanical Club is just such a specimen as these, MASSACHUSETTS: bog on Day Farm, Scituate, Aug. 13, 1899, Emile F. Williams. Also, Mr. R. A. Ware writes me that he found a specimen of just this type in Provincetown, Massachusetts. American authors have occasionally recorded this sort of monstrosity, "The³ same collector [name not given] has from Carlstadt, N. J., *Typha latifolia*, in which there are several small spikes arising side by side from the top of the culm, and which appear to be due to fission." In the same volume is another record,⁴ "Mr. Bicknell displayed . . . specimens of *Typha latifolia*, L., showing fission of the spike." Half a dozen years later it was again recorded,⁵ "David F. Day stated . . . that double fertile spikes are not uncommon in *T. latifolia*." This condition has likewise been recorded by European observers, as V. Borbás,⁶ L. Ducamp,⁷ and J.-B. Gèze.⁸

¹ Pollichia ix. 23 (1851).

² *Typha* És Hottonia Teratológiak. Archivum Balatonicum ii. 80 83, 2 figs. (1928).

³ Bull. Torrey Bot. Club vii. 67–68 (1880).

⁴ l. c. 93.

⁵ Bull. Torrey Bot. Club xiii. 209 (1886).

⁶ Orsz. középt. tanügyesület Közlönye xiv. 286 (1881); and Oester. Bot. Zeitschr. xxxvi. 81 (1886).

⁷ Ass. Fr. Av. Sc., Sess. Ajaccio ii. 533 (1901).

⁸ Gèze, J.-B.: Études botaniques et agronomiques sur les *Typha* etc., U. de Paris, Thèses Série A, no. 680, 41 (1912).

As *T. angustifolia* is more abundant in the locality one would expect to find more than three, perhaps five abnormal plants in the area. On the contrary anyone walking along this stretch of meadowland by either bank of Alewife Brook, could not help being impressed with the abundance of freakish plants of *T. angustifolia*. Without any attempt to make an accurate complete census, Miss Bryant and the author walked along the high dry bank of both sides, peered into the fringe of Cat-tails and checked on a record book each abnormal specimen seen. The table that follows shows in a striking way their abundance.

Teratologic Plants of *Typha angustifolia* along $\frac{1}{4}$ mile of Alewife Brook.

Plants with 2 superposed pistillate parts of the spike	Plants with several juxtaposed pistillate parts of the spike
1	Twinned 62
	Tripled 30
	Quadrupled 6
	Quintupled 2

Five of these plants are shown to the left in the accompanying illustration.

Plants of *T. angustifolia* with two superposed pistillate portions of the spike are also represented in the Herbarium of the New England Botanical Club and the Gray Herbarium, MASSACHUSETTS: filled land, Bay State Road, Boston, June 27, 1896, Emile F. Williams. KANSAS: ponds, Reno County, Aug. 25, 1897, A. S. Hitchcock, no. 1,125. SWITZERLAND: N. C. Seringe, no. 1,304. In the Herbarium of the Connecticut Agricultural Experiment Station at New Haven is a specimen from, CONNECTICUT: near New Haven, June 16, 1876, John A. Allen. Likewise similar cases for this species have been recorded by Dr. A. Schnizlein⁹ who figures it as well, and by J.-B. Gèze.¹⁰

The form with two or more juxtaposed portions of the spike was so very common at this locality¹¹ that the not unnatural expectation was to find abundant pressed specimens and many published notes. On the contrary the Gray Herbarium and

⁹ Die Natürliche Pflanzen-familie der Typhaceen 9 (1845).

¹⁰ Gèze, I. c. 39.

¹¹ On July 16, 1940, Messrs. Fernald & Long found an extensive colony of such *Typha angustifolia* (their nos. 12,223–12,228) on Cedar Island in Back Bay, Virginia, the 2–4 spikes variously cohering, entwining or splitting apart and becoming pendulous.

the Herbarium of the New England Botanical Club do not contain any such specimens of *T. angustifolia*, but the Academy of Natural Sciences of Philadelphia has the two following specimens: One with three juxtaposed pistillate spikes, from DELAWARE: ditches near Greenbank, June 7, 1880, A. Commons; and one with two juxtaposed pistillate spikes from DELAWARE: marshes, McCrone's, Wilmington, Aug. 15, 1874, A. Commons. A prolonged search of American botanical publications did not reveal any published records of the sort. But, as before, several European botanists have detected and described the abnormality, see Beckhaus,¹² Wigand,¹³ and J.-B. Gèze.¹⁴ The latter in his monograph describes experiments and from these draws conclusions which answer the question that occurs to everyone, what is the cause of these queer forms, consequently a free translation from this portion of his treatise¹⁵ is given here.

In July 1909 I removed from each living spike a few flowers in order to study them under the microscope. Sometimes with a scalpel I removed a minute fragment of the female axis in order to examine the protuberances.

Ten days afterwards, the holes in the surface of the spike, caused by these operations, had disappeared, but there remained in their places depressions; fifteen days later these depressions were dotted with numerous "anlagen." In the cases where the axis had been wounded, ten days afterward a longitudinal pad appeared extending from the injured point to the base of the spike. Finally these pads with a longitudinal portion of the axis separated from the principal spike, but remained attached to the stem immediately below. The place where the pad had arisen could be recognized by a white line formed of protruding hairs on the surface of the principal spike, which had newly regained its cylindrical shape. The detached portion also, thanks to the expansion of the cluster of hairs which surround each flower, had assumed a cylindrical form.

When the piece removed had been taken from the summit of the female spike, the two resulting spikes were equal in length, but the detached part, being less rigid, warped readily into a

¹² Jahresh. d. Westph. Ver. f. Wiss. u. Kunst, Muenster xiv. 122 (1886).

¹³ Botanische Hefte ii. 98 (1887).

¹⁴ l. c. 40-41.

¹⁵ l. c. 41-43.

spiral.¹⁶ I have thus been able to obtain several secondary spikes in juxtaposition to the principal one.

As I have said, it was in a pasture that I collected the *Typha* with three equal juxtaposed female spikes, the axis being cleft into 3 complementary parts which on being brought together reform a full cylindrical stem. Near the place where I collected this specimen the cows were in the habit of feeding. It is natural to suppose that one of them with one munch bit off the tip of the female spike and crushed the axis into three parts quite to its base. .

Dr. Kronfeld¹⁷ attributed this longitudinal partition of the female spike to alternations of dryness and humidity. He knew a station where he observed this in *T. angustifolia* each year. Dr. Kronfeld at first believed that he had found a proof of the origin of the multiple spikes of *Typha* and drew a parallel with the case of *Andropogon*, but a profounder study of more material convinced him, as my observations did me, that this splitting of the axis is due to wounding. The sudden variations in the quantity of water contained in the spike (this quantity can attain 3 to 5 times the weight of the dry spike) tear apart the tissues of the female axis, as Dr. Kronfeld verified by an anatomical study of the axis.

From studying the fresh Cat-tails no cause for their abnormal development was determined. These same specimens were left in a warm room for a week and then examined again. This time there were some very conspicuous light colored lines on the surface of the dark spikes, caused by the fluffing out of the bristles. That appearance gave a clue immediately, and in a few seconds by prodding with the point of a pencil a caterpillar was uncovered. At the end of each of the lines of light fluff, a similar caterpillar was found. They were about a centimeter in length, yellowish white, with narrow brown lines running longitudinally on the back. These larvae were found in every one of the ab-

¹⁶ Mr. Gèze's phrasing of this is, "mais la partie détachée, moins rigide, se tordait bientôt en spirale." He so definitely says spirale that I translate it spiral, but in the case under discussion (as shown by his Plate II. fig. B.) which is the one that I saw most frequently, the several segments are attached to the common stem at the bottom, and, during the greater part of their development, at the top also. While held in this position the spikes are not free to warp in a spiral, but on the contrary only into an arc. This is of frequent occurrence, and, I believe, is what Mr. Gèze intended to describe.

¹⁷ Kronfeld, Dr. E.-M.: Monographie der Gattung *Typha*, Sitzber. Akad. Wien. i. Abt. xvi. 105, 109 (1889).

normal spikes, sometimes one, sometimes many in a spike. With this knowledge it does not seem necessary to postulate the wounding of the young spike by a cow or by any other cause than the work of these parasitic larvae. They without question cause the splitting of the spike into two or more juxtaposed parts. Fresh material of the Cat-tails containing active larvae was furnished to Dr. C. T. Brues of Harvard University and to Mr. Anthony Spuler, Assistant Entomologist of the State College of Washington. Repeated attempts were made to raise the moths, until finally in June, 1921, Mr. Spuler succeeded. The moths were then submitted to the Smithsonian Institution and Mr. August Busck identified them as *Limnoecia phragmitella* Stainton. He writes that they are "cosmopolitan—found wherever *Typha* is found."

In a popular account¹⁸ of the habits of this moth P. W. Claasen writes that the larvae spin a web to hold the cat-tail together, that they live over winter in it, and that the night-flying moths come in July.

The locality on Alewife Brook was under observation from 1917 to 1920. A similar locality in Europe is recorded by Dr. Kronfeld, and he states that the abnormal plants are produced year after year. In the former case it is certain that the large numbers of juxtaposed spikes are produced due to the activities of this larva; in the latter case the cause is probably the same.

One point as yet does not seem to be explained. The larvae of this moth cause the spikes of *Typha angustifolia* to have an abnormal development. *T. angustifolia*, however, has a distinctly limited range, and is far less common than *T. latifolia*. The moth in question is said to be "cosmopolitan—found wherever *Typha* is found." Along Alewife Brook the moths seemed to make an unerring selection, always choosing the spikes of *T. angustifolia* instead of those of *T. latifolia* when depositing its eggs. In other localities does this moth lay its eggs in *T. latifolia*? If so, are the Cat-tails that harbor them abnormal in development?

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¹⁸ Claasen, P. W.: The tale of the cat-tail, Nat. Study Rev. xv. 244-262 (1919).

LEWIS AND CLARK: LINGUISTIC PIONEERS.—Each year produces its own dreary procession of doctoral theses executed in the standard Teutonic tradition, and usually characterized by a titanic dullness. The subject¹ of the present review, although apparently a doctoral thesis of the conventional sort, is far from dull; much of its content consists of a fiction that is stranger than truth. This thesis deals with certain aspects of one of the more romantic and remarkable of the achievements of modern man in the New World—the great westward trek of the Lewis & Clark Expedition to the farthest parts of the North American continent during the years 1804–1806. The basic account of this exploration was written by the leader of the expedition, Captain Meriwether Lewis, during the course of the trip, and his intention was to have completed and corrected the journals on his return to the United States in 1806. But Captain Lewis died before he had opportunity to prepare the journals for publication, a fact to which doubtless may be ascribed many verbal inaccuracies that appeared in the original published edition of the Journal. These verbal inaccuracies have been carefully scrutinized by Dr. Criswell. The plan and purpose of this rather pretentious study, we are told, is to examine a list of some 1859 words selected from the Journals and arranged alphabetically, with a view to recording the peculiarities of the "American language" as it was written by the great explorers. Since neither Lewis nor Clark was particularly literate or equipped with much formal education, an extraordinary collection of colloquialisms, provincialisms, homely expressions, and plain misspellings, is the inevitable harvest. Typical are "dost of salts"; having "blankets feed"; "ganaraehah" and other "venerious" troubles; "ball-pated prairie"; "leagins and mockersons" [leggins and moccasins];—these and hundreds of others as good or better will serve to indicate how rich is the filth and how bountiful the reward to the dutiful lexicographer. Had Associate Professor Criswell contented himself with the purely linguistic peculiarities of the Journals perhaps he would have done better, but instead he boldly ventures into the field of biology, obviously without adequate qualification. True, he arms himself with "acknowledgments" to several practitioners of botany and zoology, but these are poor talismans to ward off the evil spirits which persistently dog his intrepid footsteps through that part of the realm of natural science so vigorously portrayed in the Lewis & Clark Journals. When the author ventures into the botanical field, although following the blazes of Elliott Coues, Charles Vancouver Piper, and some other eminent students of flora and fauna, he loses the trees in the forest and gilds the lilies in the field. Many of his results and conclusions are nothing less than ludicrous, as, for example, placing mistletoe in the Aristolochiaceae, the custard apple in Menispermaceae, peppermint in the Cruciferae, stinking clover (*Cleome*) in the Sarraceniaceae, the genus *Brodiaea* in the Leguminosae, persimmon in the Sapotaceae, prickly pear and *Osmaronia* (which is called "fringe tree") in the Loasaceae, elderberry in the Valerianaceae, cucumber in the Campanulaceae, and the devil's-club (*Oplopanax horridum*) in the Compositae.

¹ Elijah Harry Criswell. Lewis & Clark: Linguistic Pioneers. University of Missouri Studies 15: i–cxcii, 1–102. 1940.

We are told that the plant with the rather fetching name of arsesmart is in the Liliaceae, but a few pages later it pops up in the genus *Polygonum*. Is this mutation, or merely experimental taxonomy? Most of the text consists of a commentary on and an interpretation of the Journals, but occasionally we are treated to a manifestation of sheer botanical inspiration, such as: "The May-apple is certainly so named because of the time at which its fruit matures . . ."? The author cannot be rightly said to be quite ruthless with personal names, in spite of Humboldt, Bonpland, and Ruth for our old friends HBK., or for referring to Mrs. Agnes Chase, the distinguished Washington agrostologist, as Miss Chase.

Obviously, our author is not a botanist; indeed, he lays no claim to being one; he is a student of words. Let us see what he does with some of the words. About half way through the book (p. clxiii) the following explanation is offered: "We now come to what is perhaps the most important lexicographical contribution of the present study—our list of over seven hundred terms . . . hitherto unrecorded in any dictionary. The Lewis & Clark Journals offer a rich treasure of new material which should be added to our dictionaries, but which has hitherto escaped all the lexicographers . . . Nearly six hundred of them have a claim to be considered as Americanisms." A few of these "Unrecorded Americanisms (Zoological and Botanical)" selected at random from Criswell's lists are: *corvus*, *fucus*, *larus*, *Sagittaria sagittifolia*, Canadian balsam, large fern, small fern, yellow lily, penny-royal, long-leaved pine, narrow-leaved willow, alder, angelica, arrow-head, ash, bluebell, cedar, cherry, cinquefoil, coltsfoot, columbine, elder, fern, flax, garlic, gooseberry, grape, hazelnut, juniper, kale, lobelia, mulberry, nettle, onion, plantain, poplar, rape, raven, rose, rue, rye, service-berry, sorrel, spearmint, tansy, thistle, violet. All this, of course, is plain nonsense; these words obviously are not "Americanisms", either unrecorded or recorded; most of them are English names of plants that grow in England; several are biological names of genera of plants or animals. That the author has had at least a dim suspicion of this is indicated in the following rather lame explanation (p. clxix): "However, we do find several Latin borrowings in this list: *aborigines*, *corvus*, *larus*, *fucus*, and *Sagittaria sagittifolia*. The last four represent half-hearted attempts of the explorers to apply scientific terminology to some of the plants and animals, with the result that, unacquainted with scientific usage, they simply use the scientific term as a common name for the thing either singly or in combination with a qualifying adjective." What does he mean, "half-hearted"? Criswell argues (p. clxix) that when a name is "applied to a new genus there is an unquestionable extension in meaning, which, since to an American animal, is American by origin." Can it be possible that he believes that crows (*Corvus*), or gulls (*Larus*), were "new genera" discovered by Lewis & Clark? The argument that the word e. g., *elder*, when used by Lewis & Clark for plants of a western North American species not hitherto seen by human beings other than Indians, constitutes an "unquestionable extension in meaning", seems to be rather pointless in view of the fact that *elder* is a generic, *not* a specific term; it includes any or all individual plants of all existing species of

the genus *Sambucus*, all fossil species, as well as any species of elder yet to be evolved.

Many of the interpretations of botanical data listed under the heading of "Extensions of Meanings of New Genera" (p. clxxv) are entirely misleading, as, for instance, when Lewis is said to have used the word *beech* in a new sense for the common lowland alder (*Alnus rubra*) of the Pacific slope. Actually, this is what Lewis wrote: "The stem of the black alder arrives to a great size. It is simple, branching, and diffuse; the bark is smooth, of a light colour, with white spreading spots, *resembling those of the beech.*" (italics mine). Clearly, Lewis was not using the term in a new generic sense; he was merely comparing the tree he was describing (alder) with another kind of tree (beech) with which he was familiar in eastern North America. The curious reader may supply himself with a considerable number of other instances of this sort. The author also gives tables of words supposed to have been used by Lewis & Clark long before they were used by anyone else, including such names as white oak, ironwood, white walnut, red cedar, arrowwood, slippery elm, tamarack, etc. Actually, these names appeared in botanical works many years earlier. For example, some of them appear in the English edition of Peter Kalm's (1749-50) *Travels into North America* by J. R. Forster in 1770, while others were used by Michaux, Bigelow, Aiton, and other botanists some years before the publication of the Lewis & Clark Journal.

There is no need of citing additional examples from this plethora of scientific inaccuracies. It is obvious that the author has gone somewhat beyond his depth. It is a pity that the science of systematic botany has to bear the burden of such unripe scholarship. In conclusion, it can be pointed out that, although *Lewis & Clark: Linguistic Pioneers* may contain some material of value to lexicographers, it scarcely can be regarded as an authoritative source of botanical information, or even as a reliable commentary on the linguistic peculiarities of the Lewis & Clark Journals.—GEORGE NEVILLE JONES, University of Illinois.

NAPAEA DIOICA IN NEW ENGLAND.—On August 24, 1940, while collecting along the "River Road", Lewiston, Vermont (Norwich railroad station), I found a clump of tall malvaceous plants growing beside an old cellar-hole three-fifths of a mile north of the Hanover bridge. A specimen was collected in the belief that it was an escape from cultivation, and by comparison with specimens in the Jesup Herbarium at Dartmouth College was identified as *Napaea dioica* L. The identification has been checked by Mr. C. A. Weatherby of the Gray Herbarium, from material subsequently sent to him. Further investigation at the original site disclosed two more clumps, in rather dry, sandy soil, one less than ten feet from the B. & M. railroad tracks, which lie in a cut just behind the cellar-hole. One clump con-

sisted only of long-petioled basal leaves, but the other two had about thirty flowering stems apiece, some five feet high with large diffuse panicles. The flowers were just coming into bloom when the plant was first seen, considerably later than the "July" of manuals. Only staminate plants have been collected.

According to the manuals, this plant is restricted to the limestone valleys of the Alleghenies, southwestern Pennsylvania to Virginia, and bottom lands in Ohio and Illinois to Minnesota. The species has been reported as an escape in the Arnold Arboretum¹; it is apparently not otherwise known from New England. Gray's *Synoptical Flora of North America* (1895) says it is "rare, but . . . sometimes cultivated"; it is not, however, given in Bailey's *Manual of Cultivated Plants*, and it is doubtful if the plant has been widely cultivated in this region. Its appearance here might be ascribed to distribution by the railroad. The luxuriance of the growth indicates that the plant is well established and there seems no reason why it should not persist indefinitely.—JOHN P. BROWN, Dartmouth College, Hanover, New Hampshire.

Moss FLORA OF NORTH AMERICA NORTH OF MEXICO.—With the recent issue of Volume II, Part 4, Dr. A. J. Grout brings this monumental work to a successful conclusion. The three volumes, in four parts each, together with Dr. Grout's "Mosses with a Hand Lens and Microscope" make up a manual which should be sufficient for the American and Canadian Bryologist unless he is engaged in monographic or serious research work. The present section is by Dr. A. Le Roy Andrews and completes his treatment of the Bryaceae begun in Vol. II, Part 3. Besides this Dr. Andrews also covers the Mniateae and the Rhizogoniaceae. The genera treated are Bryum, Rhodobryum, Mnium, Cinclidium and Rhizogonium. No section of the book will be more welcome to bryologists than this which brings together the confusing and cumbersome genus, Bryum, into a unified and apparently intelligible whole. Besides his editing of the entire work Dr. Grout has prepared artificial keys to Pohlia and Bryum based, as far as possible, on gametophyte characteristics. These keys are a very welcome addition to the more formal keys whose main distinctions are based on the sporophyte. Publication of this work was started in 1928 and every American bryologist owes Dr. Grout and his collaborators his thanks for the energetic manner in which it has been carried through to the end.—D. L. ORDWAY.

¹ E. J. Palmer, Journ. Arn. Arb. xi. 106 (1930).

RESEARCH FELLOWSHIP FOR WOMEN.—A fellowship with \$1,000.00 to \$1,500.00 stipend is now being awarded by Sigma Delta Epsilon, Graduate Women's Scientific Fraternity. Applications and reference statements must be received before March 15, 1941, to be considered by the Board authorized to make the 1941-1942 award of this first Sigma Delta Epsilon Fellowship celebrating the twentieth anniversary of the founding of the organization.

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Application blanks may be secured from Dr. Nina E. Gray, University, Normal, Illinois. Announcement of the award will be made early in April.

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